

**REMARKS**

Claims 1-2, 5-6 and 9-11 are pending in the present application. Claims 9-10 are withdrawn from consideration. Claims 1-2 and 5-6 are herein amended. Claims 3-4 and 7-8 are herein cancelled. New claim 11 has been added. No new matter has been entered.

**Information Disclosure Statement**

**The listing of references in the specification in paragraphs 0002-0005 was not a proper information disclosure statement.**

The Examiner noted that 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office must be submitted as an information disclosure statement (IDS).

Applicants hereby submit an Information Disclosure Statement with the references cited in paragraphs 0002-0005. Applicants respectfully request the Examiner to consider and initiate the PTO/SB/08a Form and return it with the next Office Action.

**Claim Objections**

**Claims 2, 4, 6 and 8 were objected to because claims 2 and 4, line 3 and claims 6 and 8, line 2 recite "a said".**

By this amendment, claims 2, 4, 6 and 8 have been editorially amended to overcome this objection. Thus, this objection should be withdrawn.

**Rejections under 35 USC §112, Second Paragraph**

**Claims 1-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

The Examiner asserts that claims 2, 4, 6, and 8 appear to be two separate sentences, and that the claims are generally narrative and indefinite, failing to conform to current U.S. practice.

The Examiner asserts that there is insufficient antecedent basis for some limitations in the claims. The Examiner pointed out the limitation “the surface” recited in claims 2 and 4, at line 4, and in claims 6 and 8 at line 3; “the content” recited in claims 5 and 7 at line 2; and “the production” recited in claims 6 and 8 at line 1.

The Examiner asserts that “high aspect ratio” recited in claims 1-4 is broad and indefinite.

The Examiner asserts that claim 7 recites titanium oxide whisker, wherein “the content of non-iron metal atoms is less than 10 at. %” and that it is not clear what is the iron and titanium metal content in the titanium oxide whiskers.

**Rejections under 35 USC §102(b)**

**Claims 3 and 4 were rejected under 35 U.S.C. 102(b) as being anticipated by Tatsuya (JP 2000-203998).**

**Claims 3 and 4 were rejected under 35 U.S.C. 102(b) as being anticipated by Den (US 6,649,824).**

By this amendment, claims 3 and 4 have been cancelled. Thus, the rejection of these claims has become moot.

**Claims 1-2 and 5-6 were rejected under 35 U.S.C. 102(b) as being anticipated by Hayashi (US 2002/136928).**

In the amendment, claim 1 has been amended to recite, among other things, "iron oxide whiskers of aspect ratio higher than 20 erected on said surface." The term "whisker" is used meaning "[a] single crystal that has grown in a filamentary form" (see attached "McGraw-Hill Dictionary of Scientific and Technical Terms, Sixth Edition").

The Examiner alleged as follows:

Hayashi teaches hematite particles (iron oxide with the formula  $\text{Fe}_2\text{O}_3$ ), that is formed on the surface of iron alloy; [0103, 0111, 0112, 0114]. Hayashi shows that the hematite particles are oriented in a major axis direction and are considered to be whiskers; [0020]. The recitation "is brought into contact with oxidative atmosphere so as to react the surface iron atoms with oxygen atoms brought into contact therewith at high temperature" of claims 2 and 6 is considered a process limitation that does not impart a structural limitation to the article as claimed. The reference further teaches, for example, the diameter of the iron oxide whiskers of 0.005-0.3  $\mu$ ; [0022]. This range is within the scope of the applicant's claimed range. The reference teaches an aspect ratio of 10:1 to 25:1; [0080]. This range is within the claimed range. As taught by the art, the whiskers are high-purity, and may contain sodium metal less than 200 ppm; [0070]. This range is within the claimed range for the non-iron metal atoms.

Hayashi describes at cited paragraphs as follows:

[0103] In the consideration of high-density recording, etc., the it is preferred to use the acicular magnetic metal particles containing iron as a main component or the acicular magnetic iron alloy particles. As to the

magnetic properties of the acicular magnetic metal particles containing iron as a main component or the acicular magnetic iron alloy particles, the coercive force value thereof is usually 63.7 to 278.5 kA/m (800 to 3,500 Oe), preferably 71.6 to 278.5 kA/m (900 to 3,500 Oe); and the saturation magnetization value thereof is usually 90 to 170 Am.sup.2/kg (90 to 170 emu/g), preferably 100 to 170 Am.sup.2/kg (100 to 170 emu/g).

[0111] In the consideration of high-density recording, etc. of the magnetic recording medium, it is suitable that the acicular magnetic metal particles containing iron as a main component or the acicular magnetic iron alloy particles are used as magnetic particles for magnetic recording layer, and the **hematite particles aggregates** uncoated with the surface-coating material are used as non-magnetic particles for non-magnetic undercoat layer. Such a magnetic recording medium has a coercive force value of 63.7. . . .

[0112] The magnetic recording medium produced by using the acicular magnetic metal particles containing iron as a main component or the acicular magnetic iron alloy particles as magnetic particles for magnetic recording layer, and the **hematite particles aggregates coated with the surface-coating material** as non-magnetic particles for non-magnetic undercoat layer, has a coercive force value of 63.7. . . .

[0114] In particular, in the case of the magnetic recording medium produced by using the acicular magnetic metal particles containing iron as a main component or the acicular magnetic iron alloy particles as magnetic particles for magnetic recording layer, and the high-purity **hematite particles aggregates** according to the present invention as non-magnetic particles for non-magnetic undercoat layer, the corrosion resistance as represented by the change percentage (%) of coercive force value of the magnetic recording medium thereof is usually not more than 10.0%, preferably not more than 9.5%; and the corrosion resistance as represented by the change percentage (%) of saturation magnetization thereof is usually not more than 10.0%, preferably not more than 9.5%. . . .

Thus, Hayashi discusses "hematite particles aggregates coated with the surface-coating material." Nothing in Hayashi indicates that the hematite particles are iron oxide whiskers of aspect ratio higher than 20.

For at least these reasons, claims 1 and 5 patentably distinguish over Hayashi. Claims 2 and 3, depending from claim 1, also patentably distinguish over Hayashi for at least the same reasons. Also, claim 6, depending from claim 5, also patentably distinguishes over Hayashi for at least the same reasons.

**Rejections under 35 USC §103(a)**

**Claims 7-8 were rejected under 35 U.S.C. 103(a) as being obvious over Tatsuya.**

**Claims 7-8 were rejected under 35 U.S.C. 103(a) as being obvious over Den in view of Tatsuya.**

By this amendment, claims 7 and 8 have been cancelled. Thus, the rejection of these claims has become moot.

**New Claim**

A new claim 11 depending from claim 1 have been added.

In view of the aforementioned amendments and accompanying remarks, Applicants submit that the claims, as herein amended, are in condition for allowance. Applicants request such action at an early date.

If the Examiner believes that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned attorney to arrange for an interview to expedite the disposition of this case.

Application No.: 10/594,238  
Art Unit: 1794

Amendment under 37 CFR §1.111  
Attorney Docket No.: 062907

If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,  
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Attachment: McGraw-Hill Dictionary of Scientific and Technical Terms, Sixth Edition

# **McGRAW-HILL DICTIONARY OF SCIENTIFIC AND TECHNICAL TERMS**

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On the cover: Representation of a fullerene molecule with a noble gas atom trapped inside. At the Permian-Triassic sedimentary boundary the noble gases helium and argon have been found trapped inside fullerenes. They exhibit isotope ratios quite similar to those found in meteorites, suggesting that a fireball meteorite or asteroid exploded when it hit the Earth, causing major changes in the environment. (Image copyright © Dr. Luann Becker. Reproduced with permission.)

Over the six editions of the Dictionary, material has been drawn from the following references: G. M. Garrity et al., *Taxonomic Outline of the Prokaryotes*, Release 2, Springer-Verlag, January 2002; D. W. Linzey, *Vertebrate Biology*, McGraw-Hill, 2001; J. A. Pechenik, *Biology of the Invertebrates*, 4th ed., McGraw-Hill, 2000; U.S. Air Force *Glossary of Standardized Terms*, AF Manual 11-1, vol. 1, 1972; F. Casey, ed., *Compilation of Terms in Information Sciences Technology*, Federal Council for Science and Technology, 1970; *Communications-Electronics Terminology*, AF Manual 11-1, vol. 3, 1970; P. W. Thrush, comp. and ed., *A Dictionary of Mining, Mineral, and Related Terms*, Bureau of Mines, 1968; A *DOD Glossary of Mapping, Charting and Geodetic Terms*, Department of Defense, 1967; J. M. Gilliland, *Solar-Terrestrial Physics: A Glossary of Terms and Abbreviations*, Royal Aircraft Establishment Technical Report 67158, 1967; W. H. Allen, ed., *Dictionary of Technical Terms for Aerospace Use*, National Aeronautics and Space Administration, 1965; *Glossary of Stinfo Terminology*, Office of Aerospace Research, U.S. Air Force, 1963; *Naval Dictionary of Electronic, Technical, and Imperative Terms*, Bureau of Naval Personnel, 1962; R. E. Huschke, *Glossary of Meteorology*, American Meteorological Society, 1959; *ADP Glossary*, Department of the Navy, NAVSO P-3097; *Glossary of Air Traffic Control Terms*, Federal Aviation Agency; *A Glossary of Range Terminology, White Sands Missile Range, New Mexico*, National Bureau of Standards, AD 467-424; *Nuclear Terms: A Glossary*, 2d ed., Atomic Energy Commission.

## **McGRAW-HILL DICTIONARY OF SCIENTIFIC AND TECHNICAL TERMS, Sixth Edition**

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1 2 3 4 5 6 7 8 9 0    DOW/DOW    0 8 7 6 5 4 3 2

ISBN 0-07-042313-X

### **Library of Congress Cataloging-in-Publication Data**

McGraw-Hill dictionary of scientific and technical terms--6th ed.

p.    cm.

ISBN 0-07-042313-X (alk. paper)

1. Science--Dictionaries.    2. Technology--Dictionaries.    I. Title: Dictionary of scientific and technical terms.

Q123.M15    2002  
503--dc21

2002026436



antenna, used chiefly on vehicles. Also known as fishpole antenna. { 'wip an,tən·ə }

**whipcord** [TEXT] A twill fabric with fine diagonal cords that is woven of hard-twisted cotton or worsted woolen yarns. { 'wip,kɔrd }

**whip grafting** [BOT] A method of grafting by fitting a small tongue and notch cut in the base of the scion into corresponding cuts in the stock. { 'wip ,graft·ɪŋ }

**Whipple's disease** [MED] A disease characterized by infiltration of the intestinal wall and lymphatics by macrophages filled with glycoprotein. Also known as intestinal lipodystrophy. { 'wip·əlz di,zēz }

**whippoorwill storm** See frog storm. { 'wip·ər,wil ,stɔrm }

**whipstock** [PETRO ENG] A long wedge dropped or placed in a petroleum well in order to deflect the drill from some obstruction. { 'wip,stɔk }

**whipworm disease** [MED] A chronic, wasting diarrhea produced by heavy parasitization of the large intestine by the nematode *Trichuris trichiura*, particularly in undernourished children in the tropics. { 'wip,wɜrm di,zēz }

**whirlpool** [OCEANOGR] Water in rapid rotary motion. { 'wɜrl,pʊl }

**Whirlpool galaxy** [ASTRON] A spiral galaxy of type Sc (open spiral structure), seen face on, in the constellation Canes Venatici. { 'wɜrl,pʊl ,gal·ɪk·sē }

**whirly** [METEOROL] A small violent storm, a few yards (or meters) to 100 yards (91 meters) or more in diameter, frequent in Antarctica near the time of the equinoxes. { 'wɜr·lē }

**whisker** See crystal whisker. { 'wis·kər }

**whiskers** See vibrissae. { 'wis·kəz }

**whiskey** [FOOD ENG] A potable alcoholic beverage made by distilling fermented grain mashes and aging the distillate in wood, usually oak; principal sources of grain are barley, wheat, rye, oats, and corn. { 'wis·kē }

**whispering gallery** [ACOUS] A domed gallery in which weak sounds can be heard at great distances. { 'wis·pər·ɪŋ ,gal·rē }

**whispering-gallery resonance** [PHYS] A resonance that rises in the propagation of waves around the circumference of a circular structure when an integral number of wavelengths can fit into the circumference. { 'wis·pər·ɪŋ ,gal·rē ,rez·ən·əns }

**whistle buoy** [NAV] A buoy equipped with a whistle; in the United States it is usually a conical buoy with a whistle located on its top. { 'wis·əl ,bɔi }

**whistler** [GEOPHYS] An effect that occurs when a plasma disturbance, caused by a lightning discharge, travels out along lines of magnetic force of the earth's field and is reflected back to its origin from a magnetically conjugate point on the earth's surface; the disturbance may be picked up electromagnetically and converted directly to sound; the characteristic drawn-out descending pitch of the whistler is a dispersion effect due to the greater velocity of the higher-frequency components of the disturbance. { 'wis·lər }

**whistler wave** See electron cyclotron wave. { 'wis·lər ,wæv }

**whistling meteor** [ELECTROMAG] Name applied to a radio meteor when a special system for detection is used in which the presence of the meteor is indicated by a rapidly changing audio-frequency radio signal. { 'wis·lɪŋ 'mēd·ē·ər }

**white adipose tissue** [HISTOL] The most common type of adipose tissue, representing stored food reserves and thermal and physical insulation. { 'wɪt ,ad·ə·pɔs 'tɪʃ·ū }

**white ant** See termite. { 'wɪt 'ant }

**white band disease** [INV ZOO] A coral reef disease that is typified by a loss of tissue that is visible as a band of bare white skeleton. { 'wɪt 'band di,zēz }

**white blood cell** See leukocyte. { 'wɪt 'bləd ,sel }

**white body** [PHYS] A hypothetical substance whose surface absorbs no electromagnetic radiation of any wavelength, that is, one which exhibits zero absorptivity for all wavelengths. { 'wɪt ,bɔd·ē }

**whitecap** [OCEANOGR] A cloud of bubbles at the sea surface caused by a breaking wave. { 'wɪt,kap }

**white carbon black** [MATER] A white silica powder made from silicon tetrachloride; used as a replacement for carbon black in rubber compounding. { 'wɪt 'kär·bən 'blak }

**white cast iron** [MET] An extremely hard cast iron, rapidly cooled from the melt; contains about 3% carbon in the form of cementite and fine pearlite. { 'wɪt 'kast 't·ərn }

**white cement** [MATER] Pure white portland cement, made

from raw materials with a low iron content, or by using a reducing flame to fire the clinker. { 'wɪt si'ment }

**white clay** See kaolin. { 'wɪt 'klä }

**white coal** See tasmanite. { 'wɪt 'kɔl }

**white coat** [BUILD] The finishing coat in plastering. { 'wɪt ,kɔt }

**white cobalt** See cobaltite. { 'wɪt 'kɔ,bɔlt }

**white compression** [COMMUN] In facsimile or television the reduction in picture-signal gain at levels corresponding to light areas, with respect to the gain at the level for midrange light values; the overall effect of white compression is to reduce contrast in the highlights of the picture. { 'wɪt kəm,presh·ən }

**white copperas** See zinc sulfate. { 'wɪt 'kär·rəs }

**white corpuscle** See leukocyte. { 'wɪt 'kɔr·pə·səl }

**white cutch** See gambir. { 'wɪt 'kach }

**white damp** [MIN ENG] In mining, carbon monoxide (CO); a gas that may be present in the afterdamp of a gas or coal-dust explosion, or in the gases given off by a mine fire; it is an important constituent of illuminating gas, supports combustion, and is very poisonous. { 'wɪt ,damp }

**white diarrhea** See pullorum disease. { 'wɪt ,dɪ·ə're·ə }

**white dwarf star** [ASTRON] An intrinsically faint star of very small radius and high density; the mass is about 0.6 that of the sun and the average radius is about 5000 miles (8000 kilometers); it is one final stage of stellar evolution with thermonuclear energy sources extinct. { 'wɪt 'dwɔrf 'stär }

**white feldspar** See albite. { 'wɪt 'fel,spär }

**whitefish** [VERT ZOO] Any of various food fishes in the family Salmonidae, especially of the genus *Coregonus*, characterized by an adipose dorsal fin and nearly toothless mouth. { 'wɪt,fɪʃ }

**white frost** See hoarfrost. { 'wɪt 'frɔst }

**white garnet** See leucite. { 'wɪt 'gär·nət }

**white graphite** See hexagonal boron nitride. { 'wɪt 'graf,ɪt }

**whiteheart malleable iron** [MET] White cast iron malleable and decarburized by heat treatment in an oxidizing material at 900°C for 100–150 hours; decarburization produces a light-colored fracture, in contrast to blackheart malleable iron, which is not decarburized. Also known as blackheart malleable iron. { 'wɪt,härt 'mal·yə·bəl 't·ərn }

**white infarct** [MED] An infarct in which hemorrhage is slight, or that has been decolorized by removal of blood or its pigments. { 'wɪt 'in,färkt }

**white iron** [MET] A brittle cast iron whose total carbon content is in the combined forms, and containing little or no graphite; a fresh fracture is white. { 'wɪt 't·ərn }

**white iron ore** See siderite. { 'wɪt 't·ərn ,ɔr }

**white lead** [INORG CHEM] Basic lead carbonate of variable composition, the oldest and most important lead paint pigment; also used in putty and ceramics. { 'wɪt 'led }

**white level** [COMMUN] The carrier signal level corresponding to maximum picture brightness in television and facsimile. { 'wɪt ,lev·əl }

**white light** [OPTICS] Any radiation producing the same color sensation as average noon sunlight. { 'wɪt 'lɪt }

**white light hologram** [OPTICS] A reflection hologram which can be viewed with an ordinary light source. { 'wɪt 'lɪt 'hæl·ə·gram }

**white metal** [MET] 1. Any of several white-colored metals and their alloys of relatively low melting points, such as lead, tin, antimony, and zinc. 2. A copper matte of about 77% copper, obtained from the smelting of sulfide copper ores. { 'wɪt ,med·əl }

**white-metal bearing alloy** See lead-base babbitt. { 'wɪt ,med·əl ,ber·ɪŋ 'al·ɔi }

**white mica** See muscovite. { 'wɪt 'mɪ·kə }

**white mineral oil** [MATER] A highly refined, colorless hydrocarbon oil with low volatility; used as a laxative and in medicine. Also known as liquid petrolatum; paraffinum liquidum. { 'wɪt 'min·rəl ,ɔil }

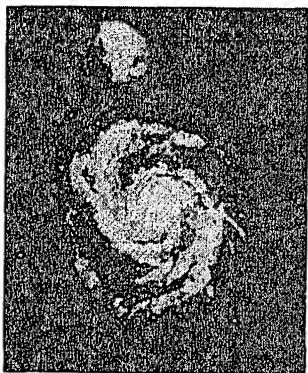
**white muscardine** [INV ZOO] A disease of the silkworm caused by the fungus *Beauveria bassiana*. { 'wɪt 'mɔs·kər,dən }

**white nickel** See rammelsbergite. { 'wɪt 'nik·əl }

**whitening filter** [ELECTR] An electrical filter which converts a given signal to white noise. Also known as prewhitening filter. { 'wɪt·niŋ ,fil·tər }

**white noise** [PHYS] Random noise that has a constant energy

WHIRLPOOL GALAXY



Whirlpool galaxy (NGC 5194), type Sc, and a companion irregular satellite (NGC 5195).

**ystal mixer** [ELECTR] A device consisting of a crystal diode to mix two frequencies; widely used in radar receivers to convert the received radar signal to an intermediate-frequency value by mixing it with a local oscillator signal. { 'krist-əl 'mik-sər }

**ystal momentum** [SOLID STATE] The product of Planck's constant and the wave vector associated with an elementary excitation in a crystal (the magnitude of the wave vector being the reciprocal of the wavelength). { 'krist-əl 'mō-mē-n̩-təm }

**monochromator** [SPECT] A spectrometer in which a narrow beam of slow neutrons from a reactor is incident on a single crystal of copper, lead, or other element mounted on a rotating circle. { 'krist-əl 'mō-nə-'krō-mā-dər }

**operation** [ELECTR] Operation using crystal-controlled oscillators. { 'krist-əl 'ap-ə-rā-shən }

**optics** [OPTICS] The study of the propagation of light and associated phenomena, in crystalline solids. { 'krist-əl 'optiks }

**oscillator** [ELECTR] An oscillator in which the frequency of the alternating-current output is determined by the piezoelectric properties of a piezoelectric crystal. Also known as crystal oscillator. { 'krist-əl 'as-ə-lād-ər }

**oven** [ENG] A temperature-controlled oven in which a sample is operated to stabilize its temperature and thereby minimize frequency drift. { 'krist-əl 'əv-ən }

**phase** [MET] A crystal structure formed by an alloy within a certain range of values of the relative proportions of its components. { 'krist-əl 'fāz }

**photoeffect** [SOLID STATE] An electromotive force caused by illumination of natural cuprite crystals or transparent thin films, and having a direction dependent on that of the incident light beam. { 'krist-əl 'fō-d-ō-i-fekt }

**pickup** [ENG ACOUS] A phonograph pickup in which the stylus of the needle in the record groove cause deformation of a piezoelectric crystal, thereby generating an audio-frequency output voltage between opposite faces of the crystal. Also known as piezoelectric pickup. { 'krist-əl 'pik-əp }

**plane** [CRYSTAL] One of a set of parallel, equally spaced planes in a crystal structure, each of which contains an infinite array of lattice points. { 'krist-əl 'plān }

**plate** [ELECTR] A precisely cut slab of quartz crystal which is lapped to final dimensions, etched to improve surface efficiency, and coated with metal on its major surfaces for connecting purposes. Also known as quartz plate. { 'krist-əl 'plāt }

**projection** [CRYSTAL] Any method of displaying the positions of the poles of a crystal by projecting them on a screen. { 'krist-əl prə-'jek-shən }

**pulling** [CRYSTAL] A method of crystal growing in which the developing crystal is gradually withdrawn from a melt. { 'krist-əl 'pul-ŋg }

**rectifier** See semiconductor diode. { 'krist-əl 'rek-ti-fa-er }

**resonator** [ELECTR] A precisely cut piezoelectric crystal whose natural frequency of vibration is used to control the frequency of an oscillator. Also known as crystal resonator. { 'krist-əl 'rez-ən-ād-ər }

**sandstone** [GEOL] Siliceous sandstone in which the silica is precipitated upon the quartz grains in crystalline form. { 'krist-əl 'sænd-stōn }

**receiver** [ELECTR] A radio receiver having a crystal detector for demodulation of the received signals, but no amplifier. { 'krist-əl 'set }

**settling** [GEOL] Sinking of crystals in magma from which they formed, by the action of gravity. { 'krist-əl 'set-ŋg }

**switcher** [ELECTROMAG] Mechanical waveguide or switching switch that, when closed, prevents undesirable frequency energy from reaching and damaging a crystal. { 'krist-əl 'shəd-ər }

**acetate** [CHEM] See cupric acetate. { 'krist-əl 'və-nəs }

**spectrometer** See Bragg spectrometer. { 'krist-əl 'spek-trō-mē-tər }

**transmitter** [ELECTR] A transmitter with automatic frequency control, in which the reference frequency is that of a crystal oscillator. { 'krist-əl 'strā-bə-līz-dər }

**structure** [CRYSTAL] The arrangement of atoms or molecules in a crystalline solid. { 'krist-əl 'strōk-chər }

**crystal symmetry** [CRYSTAL] The existence of nontrivial operations, consisting of inversions, rotations around an axis, reflections, and combinations of these, which bring a crystal into a position indistinguishable from its original position. { 'krist-əl 'sim-ə-trē }

**crystal system** [CRYSTAL] One of seven categories (cubic, hexagonal, tetragonal, trigonal, orthorhombic, monoclinic, and triclinic) into which a crystal may be classified according to the shape of the unit cell of its Bravais lattice, or according to the dominant symmetry elements of its crystal class. { 'krist-əl 'sis-təm }

**crystal transducer** [ELECTR] A transducer in which a piezoelectric crystal serves as the sensing element. { 'krist-əl tran-z'dū-sər }

**crystal tuff** [GEOL] Consolidated volcanic ash in which crystals and crystal fragments predominate. { 'krist-əl 'təf }

**crystal twin** See twin crystal. { 'krist-əl 'twin }

**crystal unit** [ELECTR] A complete assembly of one or more quartz plates in a crystal holder. { 'krist-əl 'yū-n̩-t }

**crystal video receiver** [ELECTR] A broad-tuning radar or other microwave receiver consisting only of a crystal detector and a video or audio amplifier. { 'krist-əl 'vid-ē-ō ri'sē-vər }

**crystal video rectifier** [ELECTR] A crystal rectifier transforming a high-frequency signal directly into a video-frequency signal. { 'krist-əl 'vid-ē-ō 'rek-ti-fa-er }

**crystal violet** See methyl violet. { 'krist-əl 'vī-lət }

**crystal-vitric tuff** [GEOL] Consolidated volcanic ash composed of 50-75% crystal fragments and 25-50% glass fragments. { 'krist-əl 'vi-trik 'təf }

**crystal whisker** [CRYSTAL] A single crystal that has grown in a filamentary form. Also known as whisker. { 'krist-əl 'wis-kər }

**crystogen** See cystamine. { 'kris-tə-jən }

**crystosphere** [HYD] A buried sheet or mass of ice, as in the tundra of northern America, formed by the freezing of rising and spreading springwater beneath alluvial deposits. { 'kris-tə'sfēr }

**cs** See centistoke.

**Cs** See cesium; cirrostratus cloud.

**csc** See cosecant.

**C scan** See C scope. { 'sē 'skan }

**cscH** See hyperbolic cosecant.

**C scope** [ELECTR] A cathode-ray scope on which signals appear as spots, with bearing angle as the horizontal coordinate and elevation angle as the vertical coordinate. Also known as C indicator; C scan. { 'sē 'sköp }

**C size** [ENG] One of a series of sizes to which trimmed paper and board are manufactured; for size CN, with N equal to any integer, the length of the longer side is  $2^{N/8}$  meters, while the length of the shorter side is  $2^{N/8-N/2}$  meters, with both lengths rounded off to the nearest millimeter. { 'sē 'siz }

**CSMA/CD** [COMPUT SCI] A method of controlling multiaccess computer networks in which each station on the network senses traffic and waits for it to clear before sending a message, and two devices that try to send concurrent messages must both step back and try again. Abbreviation for carrier-sense multiple access with collision detection.

**CSP** See control switching point.

**CSSB system** See companded single-sideband system. { 'sē-es-es'bē 'sis-təm }

**C stage** [ORG CHEM] The final stage in a thermosetting resin reaction in which the material is relatively insoluble and infusible; the resin in a fully cured thermoset molding is in this stage. Also known as resite. { 'sē 'stāj }

**CSW** See channel status word.

**CT** See center tap; computerized tomography.

**CIM** See computer input from microfilm.

**CTC** See centralized traffic control.

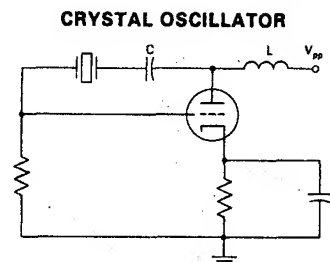
**ctDNA** See chloroplast deoxyribonucleic acid.

**CTD recorder** See salinity-temperature-depth recorder. { 'sē-tē-dē ri'kōrd-ər }

**ctenidium** [INV ZOO] 1. The comb- or featherlike respiratory apparatus of certain mollusks. 2. A row of spines on the head or thorax of some fleas. { tē-nid-ē-əm }

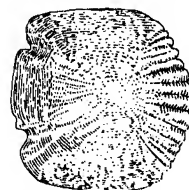
**Ctenodrilidae** [INV ZOO] A family of fringe worms belonging to the Sedentaria. { tē-nə'drī-lā-dē }

**ctenoid scale** [VERT ZOO] A thin, acellular structure composed of bonelike material and characterized by a serrated



Circuit diagram of Pierce crystal oscillator; C is capacitor, L is inductor, and  $V_{pp}$  is plate voltage.

# CTENOID SCALE



Ctenoid scale from carp.